

ABSTRACT

Methods for improving spatial and/or temporal resolution of digital images and for improving image data transmission by a novel technique – back pixelation, which involves data processing and reconstruction of overlaid images from multiple acquisition or multiple sampling. The back pixelation technique may be used for image data acquisition and transmission; it may be applied prospectively or retrospectively. In particular, the methods of this invention may be used in reducing the pixel size of a two-dimensional image or the voxel size of a three dimensional image; producing a two- or three-dimensional image from a multiplicity of images acquired from an object which are capable of overlaying one another by an increment; producing and transmitting a two- or three-dimensional image by multiple acquisitions according to an acquisition matrix; or transmitting a two- or three-dimensional image by reducing or decomposing the image to a plurality of image data packets and transmitting the same. The multiple acquisitions may be arranged by a predetermined temporal schedule. These methods may be advantageously applied in medical imaging, movies and video games, teleimage, and any other areas that involve digital image acquisition, processing, and transmission.